REMARKS/ARGUMENTS

Claims 2-9 and 11-30 have been canceled. Original Claims 1 and 10 remain in the application.

In parent application 10/006,607, Claims 1 and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Williamson US Patent No. 6,094,105. Applicants respectfully traverse this rejection for the reasons set forth below.

Independent Claim 1 requires and positively recites, a frequency synthesizer, comprising: "a digitally controlled oscillator, including a plurality of switched capacitors" and "control circuitry for selectively enabling and disabling said capacitors responsive to an oscillator tuning word, comprising: select circuitry for enabling a number of capacitors responsive to said oscillator tuning word; circuitry for dynamically varying which capacitors are enabled for a given oscillator tuning word to reduce non-linearities caused by slight variances in capacitive values".

Independent Claim 10 requires and positively recites, a method of synthesizing a frequency, comprising the steps of: "selectively enabling and disabling capacitors in a digitally controlled oscillator responsive to an oscillator tuning word" and "circuitry for dynamically varying which capacitors are enabled for a given error signal value to reduce non-linearities caused by slight variances in capacitive values".

In contrast, Williamson discloses a frequency synthesizer based on a digitally-controlled oscillator (DCO). The frequency is digitally controlled by selecting which of the binary-weighted capacitors are turned on/off and presenting the total "variable capacitance" to the crystal resonator in order to affect is resonating frequency. The digital control of frequency is accomplished through the increment/decrement operation.

Applicants respectfully submit that the Examiner has made an incorrect link between the "oscillator tuning word" (present Claims 1 and 10) with Williamson's UP/DN signal (Figure 15 in Williamson reference) Page 3, Line 5 of the Office Action dated April 11, 2003, in parent application 10/006,607. Even if, arguendo, the Examiner's assertion is correct, the pending claims are not obvious over Williamson, as set forth below.

Assuming, arguendo, that the "oscillator tuning word" of Claims 1 and 10 is the same as UP/DN signal (Figure 15 in Williamson), as the examiner suggests:

It follows then that Williamson does not have a "select circuitry for enabling a number of capacitors responsive to said oscillator tuning word" (Claim 1, Lines 6-7). Williamson contains a circuitry that only increments or decrements the number of capacitors but it does not directly control their number, so it is not "responsive to said oscillator tuning word". Furthermore, Williamson does not show a distinct "circuitry for dynamically varying which capacitors are enabled for a given oscillator tuning word" (Claim 1, Lines 8-9). The capacitor varying operation is the result of the loop operation of the complete PLL circuit aided by the noise on the reference input Fin and the components noise. It is not a function of a circuit element. The whole varying operation there is uncontrollable and undeterministic, whose effects are to be minimized.

Assuming, as suggest by Applicants, that the "oscillator tuning word" of Claims 1 and 10 is not the UP/DN signal (Figure 15 in Williamson):

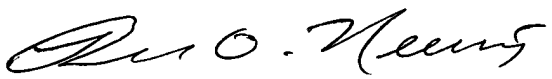
It follows then that Williamson does not have a "circuitry for dynamically varying which capacitors are enabled for a given oscillator tuning word" (Claim 1, Lines 8-9). The selection of capacitors in Williamson is always fixed for a given tuning word.

Additionally, Applicants respectfully disagree with the Examiner's contention that the "MOSCAPs may be matched to provide similar dimensions to achieve uniform characteristics. Thus reducing non-linearity and capacitance variance." (Office Action

dated April 11, 2003 in parent application 10/006,607, page 3, second paragraph of the office action). Ideally, the capacitors could be perfectly matched. Using real-world fabrication process, however, the capacitive value of each capacitor will vary slightly from the ideal. Applicants' invention addresses this unavoidable variability despite the best layout and matching practices employed. For this reason, Williamson does not contain the element "circuitry for dynamically varying ... to reduce non-linearities caused by slight variances in capacitative values." Applicants further point out that it is not possible to include this feature in Williamson due to the binary weight of the capacitors. Accordingly, the 35 U.S.C. 103(a) rejection of Claims 1 and 10 over Williamson is overcome.

Original Claims 2-9 and 11-30 have been canceled. Applicants respectfully submit that Claims 1 and 10 are allowable over Williamson and the other references cited in the attached information disclosure statement.

Respectfully submitted,



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